Transit Vehicle Types in Virginia

2,168
Transit Buses in Virginia

Heavy Duty Bus (49%)
Cutaway (36%)
Coach (10%)
Van (4%)
Articulated (1%)
Transit Vehicle Fuel Types in Virginia

- Diesel: 53%
- Gasoline: 13%
- Compressed Natural Gas (CNG): 32%
- Battery Electric: 1%
- Other: 1%

Total Transit Buses: 2,168
Battery Electric Buses (BEBs) in Virginia

26
BEBs in-service

31
BEBs ordered or waiting to be ordered
Current BEB Landscape

Zero Emission Buses by State (2021)*

Note: Includes both battery electric and hydrogen fuel cell heavy duty buses

2,790 Total Zero Emission Buses Nationwide
Current BEB Landscape

**Pros**
- Zero tailpipe emissions
- Reduced noise pollution
- Lower total cost of ownership*
- Federal government subsidies
- Improved public perception

**Cons**
- Higher upfront capital costs
  - Vehicles
  - Charging infrastructure
  - Facility retrofits
- Less predictability (range & performance)
- Battery range may limit route scheduling
- Knowledge barriers
- Limited small vehicle options
Current BEB Landscape

- BEB demand continues to increase
- Cost per unit is expected to drop as manufacturing process becomes more efficient
- Technology advancements in battery capacity and charging infrastructure (i.e. faster charging) reducing concerns on range and route scheduling
BEB Total Cost of Ownership

Lifetime Cost of Electric vs. Diesel Bus

Source: Columbia University
BEB Key Considerations

   • Performance measures

2. Industry collaboration and research is critical for successful BEB deployments
   • Site visits
   • Demonstrations

3. Coordination with utility provider to understand existing infrastructure and limitations
   • Rate modeling
   • Facility assessments

4. Disaster planning
Statewide BEB Analysis

- Preliminary cost estimates for statewide transit electrification by 2045 include:
  - **$800M** incremental cost to convert transit vehicles to electric ($1.6B total cost)
  - **$300M** to design, upgrade and install charging infrastructure
- Future impact on MERIT Capital and MERIT Operating programs
BEB Funding Opportunities

Regional
- Congestion Mitigation Air Quality Improvement Program (CMAQ)
- Regional Surface Transportation Program (RSTP)

State
- VW Mitigation Trust (retired)
- DRPT MERIT Capital Assistance
- SMART SCALE

Federal
- Federal Transit Administration (FTA) formula programs for transit capital (5307 & 5339)
- FTA Bus and Bus Facilities & Low-No Programs
  - Zero Emission Transition plans required
BEB Next Steps

- Expand on Statewide BEB Analysis
- Assist transit agencies with applications for FTA discretionary funding
  - *Identify policy changes that encourage more applications for these programs and lower the state & local financial burden for bus replacements*
- Continued coordination with the Commonwealth’s utility providers
- Consider long-term impacts to MERIT Capital and MERIT Operating programs
Questions?

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